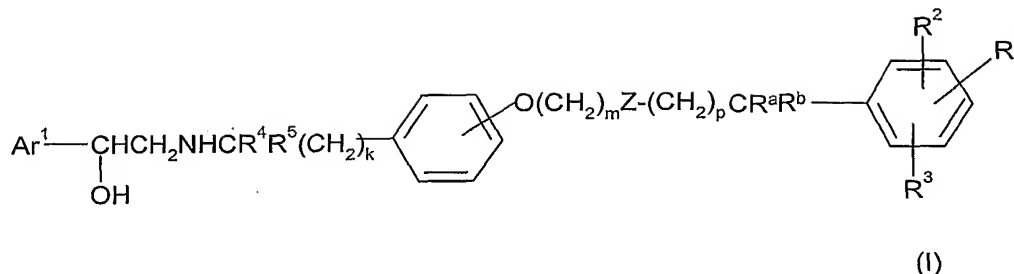


CLAIMS

A compound of formula (I)



or a salt, solvate, or physiologically functional derivative thereof, wherein:

k is an integer of from 1 to 3;

m is an integer of from 2 to 4;

p is an integer of from 0 to 3;

Z is O or CH₂-

R¹ is selected from hydrogen, C₁₋₆alkyl, hydroxy, C₁₋₆alkoxy, cyano, nitro, halo, C₁₋₆haloalkyl, XCO₂R⁸, -XC(O)NR⁷R⁸, -XNR⁶C(O)R⁷, -XNR⁶C(O)NR⁷R⁸, -XNR⁶C(O)NC(O)NR⁷R⁸, -XNR⁶SO₂R⁷, -XSO₂NR⁹R¹⁰, XSR⁶, XSOR⁶, XSO₂R⁶, XNR⁶SO₂NR⁷R⁸, XNR⁶SO₂NR⁷COOR⁷, -XNR⁷R⁸, -XNR⁶C(O)OR⁷,

or R¹ is selected from -X-aryl, -X-hetaryl, or -X-(aryloxy), each optionally substituted by 1 or 2 groups independently selected from hydroxy, C₁₋₆alkoxy, halo, C₁₋₆alkyl, C₁₋₆haloalkyl, -NR⁶C(O)R⁷, SR⁶, SOR⁶, -SO₂R⁶, -SO₂NR⁹R¹⁰, -CO₂R⁸, -NR⁷R⁸, or hetaryl optionally substituted by 1 or 2 groups independently selected from hydroxy, C₁₋₆alkoxy, halo, C₁₋₆alkyl, or C₁₋₆haloalkyl;

X is -(CH₂)_q- or C₂₋₆ alkenylene;

q is an integer from 0 to 6;

R⁶ and R⁷ are independently selected from hydrogen, C₁₋₆alkyl, C₃₋₇cycloalkyl, aryl, hetaryl, hetaryl(C₁₋₆alkyl)- and aryl(C₁₋₆alkyl)- and R⁶ and R⁷ are each independently optionally substituted by 1 or 2 groups independently selected from halo, C₁₋₆alkyl, C₃₋₇ cycloalkyl, C₁₋₆ alkoxy, C₁₋₆haloalkyl, -NHC(O)(C₁₋₆alkyl), -SO₂(C₁₋₆alkyl), -SO₂(aryl), -CO₂H, and -CO₂(C₁₋₄alkyl), -NH₂, -NH(C₁₋₆alkyl), aryl(C₁₋₆alkyl)-, aryl(C₂₋₆alkenyl)-, aryl(C₂₋₆alkynyl)-, hetaryl(C₁₋₆alkyl)-, -NHSO₂aryl, -NH(hetarylC₁₋₆alkyl), -NHSO₂hetaryl,

-NHSO₂(C₁₋₆alkyl), -NHC(O)aryl, or -NHC(O)hetaryl:

R⁸ is selected from hydrogen, C₁₋₆alkyl and C₃₋₇cycloalkyl;

or R⁷ and R⁸, together with the nitrogen atom to which they are bonded, form a 5-, 6- or 7-membered nitrogen – containing ring;

R⁹ and R¹⁰ are independently selected from hydrogen, C₁₋₆alkyl, C₃₋₇cycloalkyl, aryl, hetaryl, hetaryl(C₁₋₆alkyl)- and aryl(C₁₋₆alkyl)-, or R⁹ and R¹⁰, together with the nitrogen to which they are bonded, form a 5-, 6-, or 7- membered nitrogen containing ring;

and R⁹ and R¹⁰ are each optionally substituted by one or two groups independently selected from halo, C₁₋₆alkyl, and C₃₋₇cycloalkyl, C₁₋₆haloalkyl;

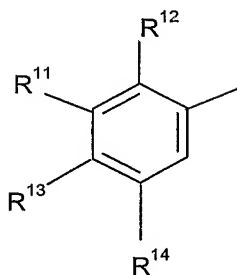
R² is selected from hydrogen, hydroxy, C₁₋₆alkyl, C₁₋₆alkoxy, halo, aryl, aryl(C₁₋₆alkyl)-, C₁₋₆haloalkoxy, and C₁₋₆haloalkyl;

R³ is selected from hydrogen, hydroxy, C₁₋₆alkyl, C₁₋₆alkoxy, halo, aryl, aryl(C₁₋₆alkyl)-, C₁₋₆haloalkoxy, and C₁₋₆haloalkyl;

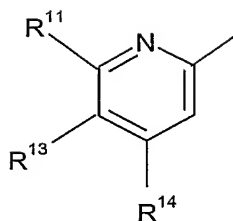
R^a and R^b are independently selected from hydrogen and C₁₋₄ alkyl.

R⁴ and R⁵ are independently selected from hydrogen and C₁₋₄ alkyl with the proviso that the total number of carbon atoms in R⁴ and R⁵ is not more than 4: and

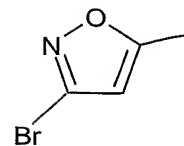
Ar¹ is a group selected from



(a)

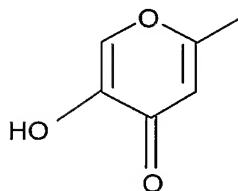


(b)



(c)

and



(d)

wherein R^{11} represents halogen, $-(CH_2)_nOR^{15}$, $-NR^{15}C(O)R^{16}$, $-NR^{15}SO_2R^{16}$, $-SO_2NR^{15}R^{16}$, $-NR^{15}R^{16}$, $-OC(O)R^{17}$ or $OC(O)NR^{15}R^{16}$, and R^{12} represents hydrogen, halogen or C_{1-4} alkyl;

or R^{11} represents $-NHR^{18}$ and R^{12} and $-NHR^{18}$ together form a 5- or 6- membered heterocyclic ring;

R^{13} represents hydrogen, halogen, $-OR^{15}$ or $-NR^{15}R^{16}$;

R^{14} represents hydrogen, halogen, halo C_{1-4} alkyl, $-OR^{15}$, $-NR^{15}R^{16}$, $-OC(O)R^{17}$ or $OC(O)NR^{15}R^{16}$;

R^{15} and R^{16} each independently represents hydrogen or C_{1-4} alkyl, or in the groups $-NR^{15}R^{16}$, $-SO_2NR^{15}R^{16}$ and $-OC(O)NR^{15}R^{16}$, R^{15} and R^{16} independently represent hydrogen or C_{1-4} alkyl or together with the nitrogen atom to which they are attached form a 5-, 6- or 7-membered nitrogen-containing ring,

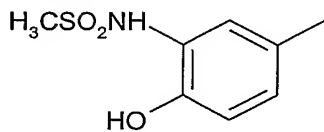
R^{17} represents an aryl group which may be unsubstituted or substituted by one or more substituents selected from halogen, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy or halo C_{1-4} alkyl; and

n is zero or an integer from 1 to 4;

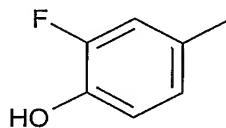
provided that in the group (a), when R^{11} represents $-(CH_2)_nOR^{15}$ and n is 1, R^{13} is not OH.

2. A compound according to claim 1 wherein Ar^1 is selected from group (a) or group (b), as defined in claim 1.

3. A compound of formula (I) according to claim 2 wherein group (a) is selected from a group of formula (iv) or (xix):

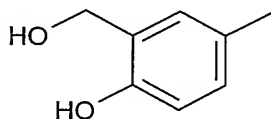


(iv)



(xix)

4. A compound of formula (I) according to claim 2 wherein group (b) is a group of formula (iii):



(iii)

5. A compound of formula (I) according to any of claims 1-4 wherein R^1 is selected from hydrogen, C_{1-4} alkyl, hydroxy, cyano, C_{1-6} alkoxy, halo, XCO_2R^8 , XNR^6COR^7 , $XCONR^7R^8$, $-NR^6C(O)NR^7R^8$, $XSOR^6$, $XNR^6SO_2NR^7R^8$, $XNR^6SO_2NR^7CO_2R^7$ and $-NR^6SO_2R^7$ wherein R^6 and R^7 are as defined above.

6. A compound of formula (I) according to claim 5 wherein R^1 is selected from $XC(O)NR^7R^8$ or hydrogen.

7. A compound of formula (I) according to any of claims 1-6 wherein R^2 and R^3 each represent hydrogen.

8. A compound of formula (I) according to any of claims 1-7 wherein R⁴ and R⁵ each represent hydrogen.

9. A compound of formula (I) according to any of claims 1-8 wherein R^a and R^b each represent hydrogen.

10. A compound of formula (I) according to claim 1 which is selected from:

3-{{2-[4-{2-[(2*R*)-2-hydroxy-2-{4-hydroxy-3-[(methylsulfonyl)amino]phenyl}ethyl]amino}ethyl]phenoxy}ethoxy}methyl}benzamide;
N-{2-hydroxy-5-[(1*R*)-1-hydroxy-2-({2-[4-(4-phenylbutoxy)phenyl]ethyl}amino)ethyl]phenyl}methanesulfonamide;
N-(5-[(1*R*)-2-[(2-{4-[2-(benzyloxy)ethoxy]phenyl}ethyl)amino]-1-hydroxyethyl]-2-hydroxyphenyl)methanesulfonamide;
 3-({2-[4-(2-[(2*R*)-2-(3-fluoro-4-hydroxyphenyl)-2-hydroxyethyl]amino)ethyl]phenoxy}ethoxy}methyl)benzamide;
 4-[(1*R*)-2-[(2-{4-[2-(benzyloxy)ethoxy]phenyl}ethyl)amino]-1-hydroxyethyl]-2-fluorophenol;
 2-fluoro-4-[(1*R*)-1-hydroxy-2-({2-[4-(4-phenylbutoxy)phenyl]ethyl}amino)ethyl]phenol;
 3-[(2-{4-[2-({2-hydroxy-2-[5-hydroxy-6-(hydroxymethyl)pyridin-2-yl]ethyl}amino)ethyl]phenoxy}ethoxy}methyl)benzamide;
 6-{2-[(2-{4-[2-(benzyloxy)ethoxy]phenyl}ethyl)amino]-1-hydroxyethyl}-2-(hydroxymethyl)pyridin-3-ol;
 2-(hydroxymethyl)-6-[1-hydroxy-2-({2-[4-(4-phenylbutoxy)phenyl]ethyl}amino)ethyl]pyridin-3-ol;

and salts, solvates and physiologically functional derivatives thereof.

11. A method for the prophylaxis or treatment of a clinical condition in a mammal, such as a human, for which a selective β_2 -adrenoreceptor agonist is indicated, which comprises administration of a therapeutically effective amount of a compound of formula (I), according to any of claims 1-10, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof.

12. A compound of formula (I), according to any of claims 1-10, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof for use in medical therapy.

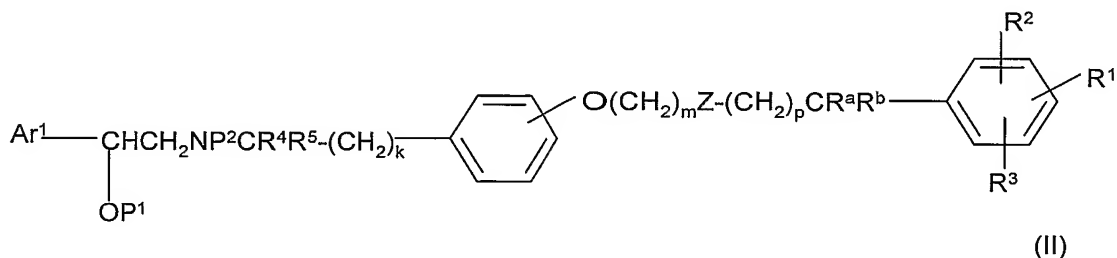
13. A compound of formula (I), according to any of claims 1-10, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof for use in prophylaxis or treatment of a condition for which a selective β_2 -adrenoreceptor agonist is indicated.

14. A pharmaceutical formulation comprising a compound of formula (I), according to any of claims 1-10, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof, and a pharmaceutically acceptable carrier or excipient, and optionally one or more other therapeutic ingredients.

15. The use of a compound of formula (I), according to any of claims 1-10, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof in the manufacture of a medicament for the prophylaxis or treatment of a clinical condition for which a selective β_2 -adrenoreceptor agonist is indicated.

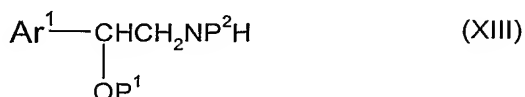
16. A process for the preparation of a compound of formula (I), according to any of claims 1-10, or a salt, solvate, or physiologically functional derivative thereof, which comprises:

(a) deprotection of a protected intermediate, for example of formula (II):

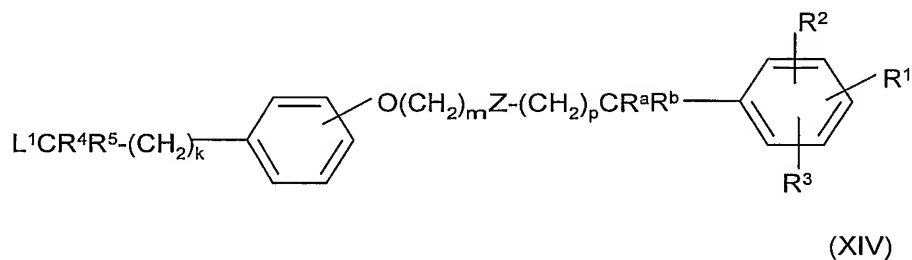


or a salt or solvate thereof, wherein Ar^1 , R^1 , R^2 , R^3 , R^a , R^b , R^4 , R^5 , Z , k , m , and p are as defined for the compounds of formula (I), and P^1 and P^2 are each independently either hydrogen or a protecting group provided that at least one of P^1 and P^2 is a protecting group;
or

(b) alkylation of an amine of formula (XIII)

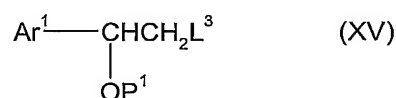


wherein Ar^1 is as defined above for compounds of formula (I) and P^1 and P^2 are each independently either hydrogen or a protecting group,
with a compound of formula (XIV):

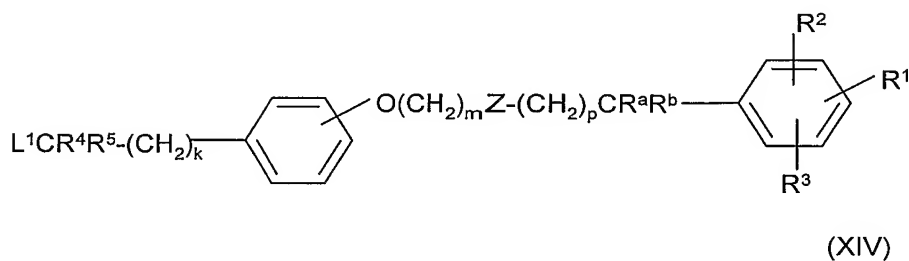


wherein R^1 , R^2 , R^3 , R^4 , R^5 , R^a , R^b , Z , m , and p are as defined for the compound of formula (I) and L^1 is a leaving group;

(c) reacting a compound of formula (XV):

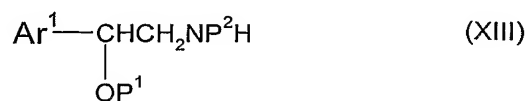


wherein P^1 and Ar^1 are as hereinbefore defined and L^3 is a leaving group, with an amine of formula (XVI):



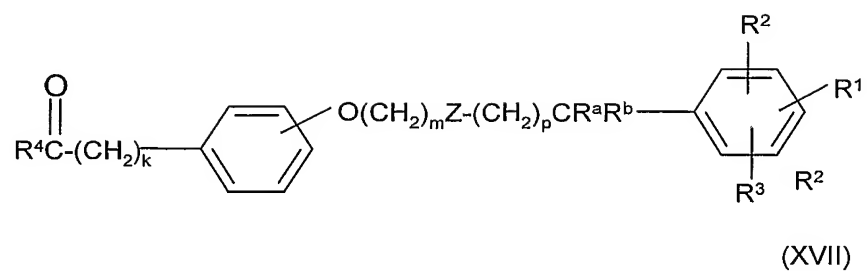
wherein R^1 , R^2 , R^3 , R^4 , R^5 , R^a , R^b , Z , k , m , p and P^2 are as hereinbefore defined; or

d) reacting a compound of formula (XIII):



as hereinbefore defined,

with a compound of formula (XVII):



under conditions suitable to effect reductive amination.

followed by the following steps in any order:

- (i) optional removal of any protecting groups;
- (ii) optional separation of an enantiomer from a mixture of enantiomers;
- (iii) optional conversion of the product to a corresponding salt, solvate, or physiologically functional derivative thereof.